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Slides

Comments

The Oak Forest Resource in Iowa: An Overview of Iowa's Oak Forest Resource.

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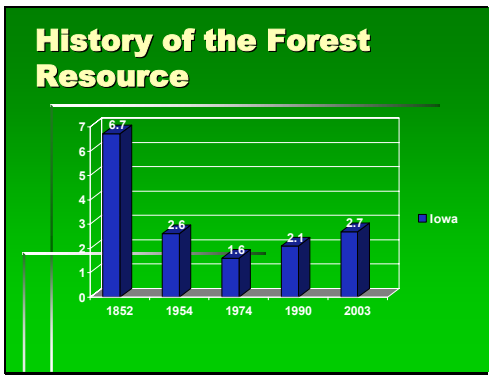

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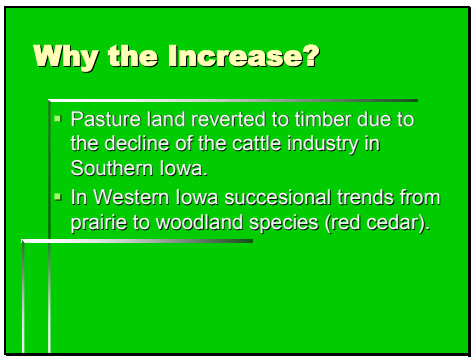

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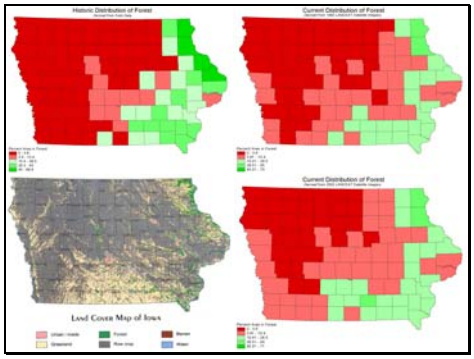

Top left map shows likely historic distribution of forest based upon soils data. Top right shows forest distribution based on 1992 GIS data. Bottom left is land cover in 1992. Bottom right is forest distribution based on 2002 GIS data. The greener the county the more forested the redder the county the less forested.

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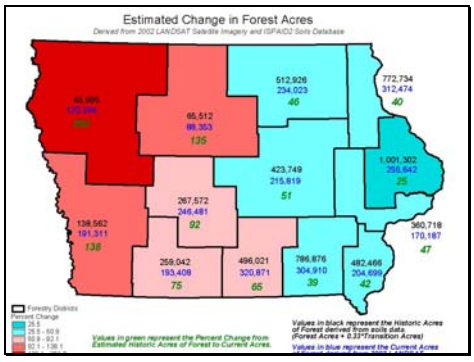

This slide shows loss of forest cover by forestry district. Top number is total estimated pre-settlement forested acres. Blue number is remaining forest acres. Bottom green number is percentage of remaining forest.

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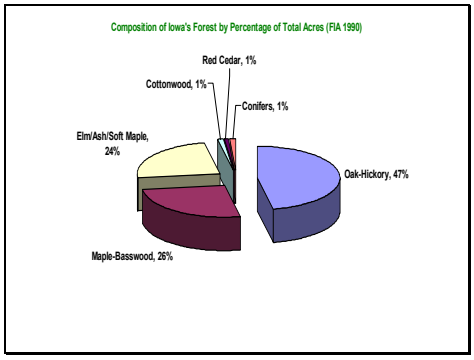

Shows percentage of forested acres in specific forest cover types. Based on 1990 USDA Forest Service Forest Inventory Analysis (FIA) data. Note: 47% of forested acres are in oak or oak-hickory forest cover.

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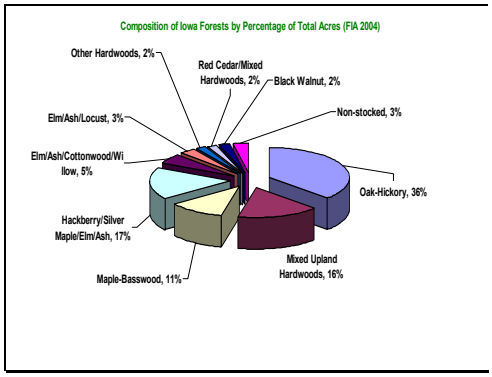

2003 FIA data shows a shift in forest cover types. There is less oak as a percentage of overall forest land and an increase in mixed upland hardwoods. Also note that hackberry populations have increased enough to be named in a forest cover type associations. Also note that the category "mixed upland hardwoods" was used for the first time. This underscores the current trend away from oak hickory and maple-basswood to an amalgamation of less desirable species.

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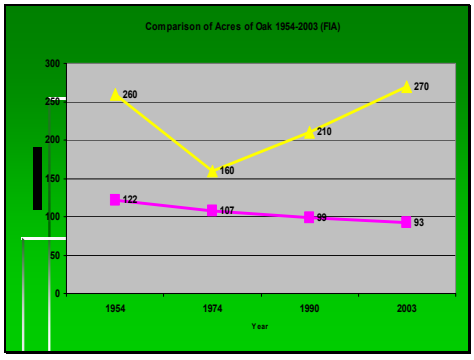

Shows overall trends in forested acres since 1954 (yellow line) and the trend for oak acres since 1954 (purple line).

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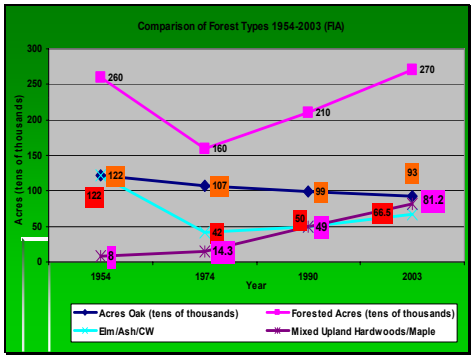

Adds in trends for Elm/Ash/Cottonwood/Hackberry (bottomland hardwoods), and combines upland mixed hardwoods and hard maple. Shows the increase in forested acres is mainly due to increases in bottomland hardwoods and mixed upland hardwoods and maple (not oak). If the trend lines are followed it looks as if in the next 10-15 years mixed upland hardwoods will replace oak-hickory as the most predominant forest cover type in Iowa.

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Many people would like to find a single reason for the loss oak such as insect and disease (oak tatters, top left and hypoxolyn canker top right), deer numbers, or invasive species (garlic mustard at white Pine Hollow bottom right). The truth is that there is not a smoking gun that points to one external cause of the decline in oak forest acres. It is much more likely that there is a confluence of events that is responsible for the decline.

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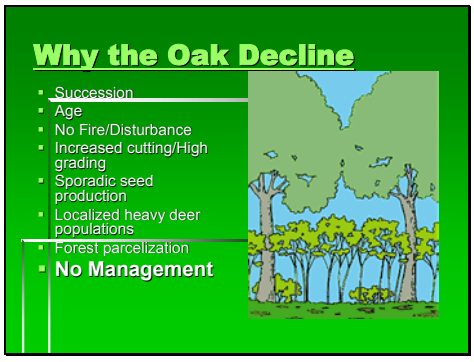
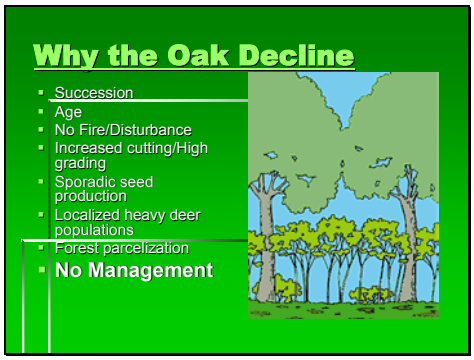


Factors that relate to the loss of oak forests in Iowa are:

Succession – shade tolerant hardwoods eventually replace shade intolerant hardwoods in the absence of disturbance. If the large trees in the picture are harvested or die and shade tolerant hardwoods are in the mid-story, those trees will be the next stand.

Age – prior to settlement periodic prairie fires swept into the woodlands and eliminated mid-story layers, thus giving the thicker barked oak (oak also stump sprouts



readily) a competitive advantage over other species. When the fire eco-system was eliminated oak was well positioned to fill the void. That is largely why we have oak today. However, many of these stands are now 150+ years old. These stands may be reaching the twilight of their life span. Without fire or disturbance oak seedlings cannot get the light they need to survive.

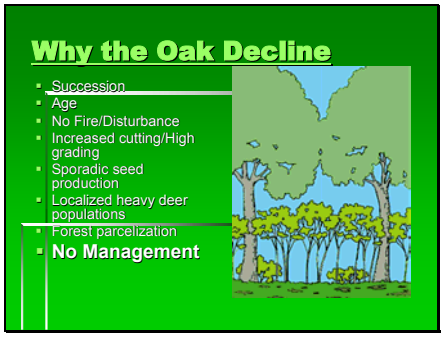
Sporadic seed production – Oak (exception bur oak) tend to produce good seed crops once every five years. So timing is very important to regeneration practices. If you prepare a site for regeneration and do not get an acorn crop for 4 years oak will be difficult to regenerate without repeated disturbances such as fire or mechanical thinning.

Deer – in certain areas deer may be so highly concentrated that they eat oak seedlings and keep them browsed to a point where other less palatable species over grow the oak.

Parcelization – As forest land is carved into smaller tracts with houses near or in the timber the management practice that can regenerate oak become less palatable for landowners because they do not want to “ruin” there woods. They like big trees and are not overly concerned about future species composition. The woodland becomes an extension off their yard not wild land.

The reality is that most Iowa woodland owners manage through benign neglect. They think that doing nothing is really a good thing

and they therefore do little active forest management. The primary reason for oak loss is no active forest management aimed at regenerating and maintaining oak in our woodlands. Many of the oak regeneration issues can be addressed through proper application of silvicultural techniques and, quite frankly, a little luck doesn't hurt either.



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To grow oak like the one on the left you have to cause a mess like the one on the right.

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Maple mid-story October 2004 Fayette county. No oak seedlings or saplings present because of the dense shade from the maple mid-story layer.

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Oak overstory and hard maple mid-story Linn County 2003.

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Same site as last slide with maple removed. This opens up the forest floor to sunlight and gives oak a chance to regenerate. This site may need repeated disturbance (fire or mechanical thinning) in the future if there is not a good acorn crop in the next few years.

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Mechanical thinning: Killing weed trees and treating with Tordon, Jefferson County. Upper insert picture shows double girdle, lower shows Tordon painted on stump to stop re-sprouting.

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Hunts Woods south of Burlington in Des Moines County. Upper left picture shows an unburned area. Upper right shows a spring burned area across a trail in the same woods. This area was burned 3 consecutive springs. Bottom picture show oak regeneration following the spring 2004 burn.

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Scarification on Yellow River State Forest. A dozer lightly scraps soil to prepare a seedbed for oak.

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What scarification looks like when complete.

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In Wisconsin sites are scarified with an anchor chain pulled by a small dozer.

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The next several slides document clear cut areas at various stages in their development.

1-year old clear cut with scarification Yellow River State Forest.

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10 year old clear-cut with scarification yellow River State Forest.

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17 year old clear cut with scarification – Floyd County

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30 year old clear-cut Yellow River State Forest.

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60 year old clear cut Yellow River State Forest.

Caution!!! Clear-cutting alone will not guarantee regeneration of oak. If adequate oak regeneration is not present in the under-story or on the forest floor prior to harvest, oak regeneration efforts will likely fail.

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Shelterwood harvesting provides a method to get oak regeneration in an area prior to clear-cutting. This method may need 7-20 years to be successful and require repeated disturbance such as fire and/or mechanical thinning.

Slide shows a shelterwood harvest site in Van Buren County in 1996. Ironwood and other shade tolerant hardwoods were removed from the stand and about 50-60% of the overstory canopy was harvested (worst quality merchantable trees were cut and sold).

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Same Van Buren County site October 2004.

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Oak regeneration on Van Buren County site 1999.

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Oak regeneration on same Van Buren County site October 2004.

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Shelterwood with scarification yellow River state Forest. Just a clearer picture of what it would look like.

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Opening stages of shelterwood in Fayette County October 2004. Understory was removed but no overstory trees. Considering removable of some of the overstory to increase light getting to seedlings.

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Oak seedlings are starting to regenerate in the stand. Blue flags are tied to young naturally regenerated oak seedlings.

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Anemone (top left), blood root (top right), Blue cohosh (bottom left), fern (bottom right) on ten year old scarified clearcut in NE Iowa. Clearly demonstrates that even highly intensive harvesting and scarification activities do not destroy the woodland wildflower and forb seed bank. These plants comeback. In fact they may be more likely to disappear under a very dense canopy of shade tolerant hardwoods.

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Shows why owners own woodlands. Note harvesting/income is not high in either survey. Also note that landowners own woodlands for beauty and preservation, the management required for oak regeneration in counter intuitive to their instincts because it is ugly.

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If the oak loss issue is not addressed this five year olds grandchildren will quite likely live in an Iowa where oak forests are as rare as today's prairie remnants.

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Benefits of oak forests and what we stand to lose in Iowa if we do not start caring and managing this precious resource are:

- Wood Fiber (Keith Shafer's custom cutting mill)
- Recreation
- Value added wood products
- Wildlife habitat
- Hunting
- Water quality
- Fall color (tourism)
- Legacy to children

All these benefits are tied to jobs, dollars and economic development as well as the future of our forest resource.